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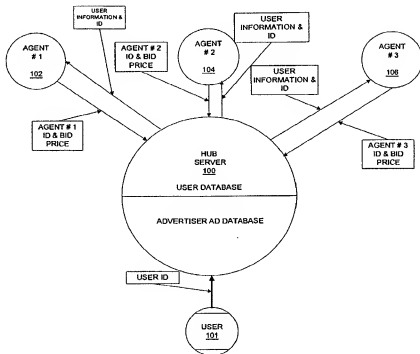
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(54) Title: A METHOD OF REALTIME ALLOCATION OF AD SPACE ON A WEB PAGE BASED ON A BIDDING PROTOCOL

(57) Abstract

A method of allocating web page space. Information about a user that is currently accessing the web page is provided to a number of bidding agents. Bid prices are received from the bidding agents for space within an interval after the user is identified and the space is allocated. The space is allocated in accordance with an established relationship to bid prices received from the bidding agents. The space may be advertising (ad) space or a listing of search results. One of the bidding agents may be a user agent representing the user. The ad space may be allocated according to highest bid price, or in a ranking order in accordance with bid prices. The method applies to an electronic shopping mall or a search engine in which case search results may be arranged in a ranking order in accordance with bid prices received from the bidding agents within the period of time.



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A METHOD OF REALTIME ALLOCATION OF AD SPACE ON A WEB PAGE BASED ON A BIDDING PROTOCOL

BACKGROUND OF THE INVENTION

Field of the Invention

This invention relates to the Internet and more particularly, to a method of real-time allocation of ad space on a web page, streaming video, or streaming audio wherein potential advertisers bid in real time for ad space based on information about a particular user. The user can participate by agreeing to match the high bid in order to exercise the option of not seeing an ad.

Description of the Prior Art

Advertisers typically advertise their products and services on web pages by banner ads that are graphical representations of products and services being offered. When a user browsing a portal web page clicks on an ad, a link causes a transfer to the advertisers web site.

Web sites may allow advertisers to advertise on web pages that fit an advertisers particular category and charge the advertiser for the advertising space. For example, the advertiser may be charged a fixed fee for every thousand times its banner ad is served up on a web page. Alternatively, an advertiser may be charged every time a browser clicks on the advertiser's banner ad. There are existing search engines where a web site can determine description placement within the search results returned from a user's inquiry. Pricing is based on bids placed by each web site for a particular search term (e.g. "sex", or "cars"). Sites are displayed in a price-descending order when a user types in one of the search terms specified. The site pays the bid price per click-through for each search term.

Sites place bids that are competitive within the chosen search term by looking at the current bid prices on the result page returned for a keyword search. If a site chooses a price of \$0.08, it's web site address and description will be displayed above sites that paid \$0.01-\$0.07 and below sites that paid \$0.09 or more within the same search term. In this scheme, a site's bid may be changed anytime (multiple times per day if desired), but is fixed for all users searching with a particular search term, not based on an individual user's information.

While the above-described methods provide a way for sites to make their presence on a search engine known, and sites can choose a ranking that depends on keywords used in a search, there is no mechanism by which ad space or search engine ranking can be dynamically priced in real time based on the profile of an actual user just arrived at the web site.

Summary of the Invention

Briefly, the invention is concerned with a method of allocating web page space. A user that is currently accessing the web page is identified and information about the user is provided to a number of bidding agents. Bid prices are received from the bidding agents for space within an interval after the user is identified and the space is allocated. The space is then allocated in accordance with an established relationship to bid prices received from the bidding agents. The space may be allocated to a bidding agent whose bid price is the highest or the space may be allocated in a ranking order in accordance with bid prices received from the bidding agents. The space may be advertising (ad) space or a listing of search results.

In accordance with an aspect of the invention, one of the bidding agents may be a user agent representing the user.

The invention has the advantage that it enables an advertiser to adjust the bid for an ad to the perceived value to be received by showing an ad, according to the profile of a particular viewer, the web site visited, time of day, or any other pertinent factor to the advertiser. The complexity of the computation is only constrained by the time limit for bids.

The invention has the further advantage that it enables an advertiser to make its ad available to a potential buyer based upon the profile of a particular buyer while the buyer is actually on the web site.

The user also can control whether ads are shown. By offering to match the highest bidder, a user can avoid being shown an ad (or substitute a picture of his kids) by paying for the page's contents directly. Additional control is available to a user through a profile optionally filled in by the user indicating preferences. Filling in specifics may make the user eligible for "mileage" programs or other benefits including cash back. For a tiny additional fee, the user could substitute the stock prices in his portfolio, his weather forecast, etc.

The cost per thousand method has the drawback that ads cannot be tailored for the specifics of a particular user. The cost per click method has the drawback that the site cannot determine an ad's appeal. A site gets less money because unappealing ads are clicked less. The ad bidding method of the present invention is the optimal system for both advertisers (they choose the value to them), and the site (they always take the largest amount offered).

Brief Description of the Drawings

The invention will be described in greater detail with reference to the drawings in which:

FIGURE 1 is an overall block diagram of an Internet commerce system in which the present invention is embodied;

FIGURE 2 is a flow diagram of computer software implementing advertiser sign-up software;

FIGURE 3 is a flow diagram of computer software implementing advertiser ad display software; and,

FIGURE 4 is a flow diagram of computer software implementing search engine results page display software.

DETAILED DESCRIPTION OF THE INVENTION

Refer to **FIGURE 1**, which is an overall block diagram of an Internet system in which the present invention is embodied. A hub server 100 provides an advertisement (ad) or several advertisements (ads) to be inserted into a space on a web page. As used herein, the term "ad" refers to a graphical image, text only, or a combination of graphics and text. The ad could be an Internet banner ad, TV ad (video and audio), radio ad (audio), or a listing, such as the results of a search or entry in a category. The server causes user information to be sent to each of a number of agents 102, 104, 106, located locally near the hub, or remotely at each advertiser's site. As used herein, the term "user" refers to a browser, viewer, or listener, capable of accessing a web site. User identification (ID) includes one or more of a cookie, IP address, MAC address, Pentium III ID, etc. User information includes any known information such as a profile, viewing habits, buying habits, income, e-mail, Internet Service Provider (ISP), zip code or other address information, search terms used, domain name, location, time of day, type of site, etc. On the Internet, an agent is a program that performs some function for an entity without direct supervision.

Agents compare the user's information with criteria, such as the advertiser's target audience. Agents representing advertisers that are interested in advertising to this particular user, return a bid price along with their agent's ID to the hub server. The agent's bid price is determined by each agent in accordance with a value placed on a user with this user information, and any other information pertinent to an advertiser. The hub server 100 fetches the ad corresponding to the advertiser with the highest bid price from an advertiser ad database. If two or more high bids are at the same price, the first one received is chosen. That advertiser's ad is displayed on the web page during the time that the potential buyer is browsing the page or interstitial page. Alternatively, the server arranges a number of ads in a ranking order in accordance with bid prices offered by the agents.

Bids are distributed to each bidding agent instantaneously so that revised bids can be made by agents before the auction is over. Once the auction is over, all agents that submitted a bid are supplied with the winning bid price. These features allow agents to adapt to the bidding environment. Also, a bidding agent can learn what price to bid if it wants to win during an auction in progress or in future auction.

Advertiser sign-up Software

Refer to **FIGURE 2**, which is a flow diagram of computer software implementing advertiser sign-up software. Advertisers may sign up to advertise products or services on a web site maintained by the hub server 100. If an advertiser's sign-up request is received 204 at the hub server, an on-line registration form is displayed 206. The advertiser completes the form, which includes provision for an ad for a product or service offered for sale. Additionally, the advertiser can select one of many bidding templates, and enter the value of each component of a bidding formula. For example, the template may be a spreadsheet into which an advertiser enters the value of each

component of a bidding formula. Alternatively, an agent (program) or an IP address of a remote agent can be provided. When the completed form is received at the hub server 208, the advertiser ID and the ad or ads are stored in the hub server advertiser ad database along with the advertiser's ID, and registration is complete 212.

Advertiser ad Display Software

Refer to **FIGURE 3**, which is a flow diagram of computer software implementing advertiser ad display software. When a user browses a web page, a cookie and iFRAME/JS or IMG request is received at the hub server 100. A cookie is a number identifying (ID) a user. The iFRAME/JS/IMG (inline frame/Java script/Image tag) is an area of the screen of the web browser, which can be updated independently. The user ID is used to search 304 the user information database maintained at the hub server, or remotely. If the user has visited any site in the network before, user information may already be stored in the database. If user information is found, 306, it is fetched and combined with other user information 310. The user information is then transmitted to all participating advertisers' agents, 308 (selected advertisers may be eliminated by a site or a user) and an auction timer is started 311. The timer is on for only a short period of time within the interval after the user is identified and ad space is available, preferably less than 1-2 seconds for banner ads and minutes for video, during which time bids for ad space are received from the agents 312. Each agent representing an advertiser that is interested in this potential buyer sends a bid price for ad space to the server, 312.

A user that registers can be given the opportunity to not have certain ads displayed. This way a user can control whether ads are shown by offering (through a user's agent) to match the highest bidder. This allows a user to avoid being shown an ad by paying for the page's contents directly. For example, a user's agent could match the highest bidder up to 3 cents, then, instead of billing the advertisers, the user's account is debited. A user might also be given a profile questionnaire of the kinds of ads to be displayed or blocked. As an incentive to supply information, filling in specifics may make a user eligible for "mileage" programs or other benefits including cash back.

The bid prices are returned to all agents that submitted bids 314, providing an opportunity for agents to revise their bids. After a very short time, the auction time expires, 314, and the auction timer is stopped 315. Bidding is cut off when the auction time expires. If the user bid wins, 318, the user's account is debited 334, the ad or ads are not displayed, the final bid price or prices are sent to all agents that bid 325, and the flow ends. If the user did not bid, the flow proceeds as set forth below.

If the mode of operation does not allow for multiple ads to be displayed on the web page 320, and if bids have been received, 316, the hub server selects the agent corresponding to the highest price bid, 321. The hub server searches the advertiser ad database for the ad corresponding to this agent ID 322, and displays the ad on the web page 323, or redirects the ad to the advertisers server. The account corresponding to the selected advertiser is debited 324.

If the mode of operation does allow for multiple ads to be displayed on the web page 320, and if bids have been received, 316, the hub server ranks each agent ID in descending order by price bid 326. The hub server searches the advertiser ad database for the ads corresponding to each agent ID 328, and displays (or redirects) the ads in bid price-descending ranking order on the web page 330. The account of each agent that bid is debited in accordance with the price bid 331. The final bid prices are sent to all agents that bid 325.

If no bids are received, 316, the hub server displays a default ad on the web page, 317. If user information is not found, 306, the bidding agents still can bid based on IP address (domain type, location, ISP), time of day, the type of site, etc.

Shopping Mall (or Search Engine) Results Page Display Software

FIGURE 4 is a flow diagram of computer software implementing electronic shopping mall results page display software. In accordance with this embodiment of the invention, a shopping mall store can determine placement within the search results returned from a user's inquiry. Pricing is based on bids placed by each agent after a query, but before the returned search results are displayed. Each site description is displayed on a results page returned for a search inquiry. Sites are displayed in a price-descending order.

When a user browses a web page, a cookie and search request is received at the hub server 400. The user ID is used to search 404 the user information database maintained at the hub server. If the profile is found, 406, it is fetched and combined with other user information 407. The shopping mall (or search engine) database is searched using a search term entered by the user 408. The user information is transmitted to all participating agents with the search term entered by the user, 410, and an auction timer is started 411. The timer is on for only a short period of time, less than 1-2 seconds, during which time bids are received from the agents 412. Each agent representing an entity that is interested in this potential buyer sends a bid price to the server, 412. The bid prices are returned to all agents that submitted bids 414, thereby providing an opportunity for agents to revise their bids. After the short time, the auction time expires, 415, and the auction timer is stopped 415. Bidding is cut off when the auction time expires.

If no bids have been received, 416, the hub server displays the sites returned from the search in a default order on the results page 417. If bids have been received, 416, the hub server displays the sites returned from the search in bid price-descending order on the results page 418. The account of each agent that submitted a bid is debited 419. In a similar manner, a search engine can receive bids for position on the results page.

While the invention has been described with ads being served up from the hub server, it will be readily understood that advertisers may have their own server, in which case ads will be served up by redirection from the hub server to that server.

The invention has been described with reference to a web page media format wherein elements of a web page are usually displayed one screen full at a time. The teachings of the invention are applicable to other media formats such as streaming video or streaming audio which enable a player program to begin playing back or displaying media content as data starts flowing in a stream from a server.

While the invention has been particularly shown and described with reference to preferred embodiments thereof, it will be understood by those skilled in the art that the foregoing and other changes in form and detail may be made therein without departing from the scope of the invention.

What is claimed is:

What is claimed is:

1. A method of allocating web page space comprising:
 - Identifying a user that is currently accessing said web page;
 - Providing, to a number of bidding agents, information about said user;
 - Receiving, for a period of time, bid prices from said bidding agents for space; and,
 - Allocating said space in accordance with an established relationship to bid prices received from said bidding agents;
 - Said period of time being within an interval after said user is identified and said space is allocated.
2. The method of claim 1 wherein said space is advertising (ad) space.
3. The method of claim 1 wherein said space is a listing of search results.
4. The method of any one of the preceding claims wherein one of said number of bidding agents is a user agent representing said user.
5. The method of claim 2 wherein said step of allocating further comprises:
 - Allocating said ad space to a bidding agent whose bid price is the highest.
6. The method of claim 2 wherein said step of allocating further comprises:
 - Arranging a number of ads in said space in a ranking order in accordance with bid prices received from said bidding agents within said period of time.
7. The method of claim 3 wherein said step of allocating further comprises:
 - Arranging search results in a ranking order in accordance with bid prices received from said bidding agents within said period of time.
8. A method of allocating web page space comprising:
 - Providing, to a number of agents, information about a user that has entered a search term on a web page;
 - Receiving, for a period of time, a bid prices from said agents for space on a results web page; and,
 - Allocating said space on said results web page in a ranking order in accordance with bid prices received from said agents within said period of time;
 - Said period of time being within an interval after said user is identified and said space is allocated.
9. The method of claim 8 wherein said space is a listing of search results.
10. A method of allocating web page advertising (ad) space comprising:

- Identifying a user that is currently accessing said web page;
 - Storing a number of ads corresponding to a plurality of advertisers;
 - Making information about said user available to agents of said advertisers; and,
 - Arranging said ads on a web page in accordance with bid prices submitted by said agents within a period of time;
 - Said period of time being within an interval after said user is identified and said space is allocated.
11. The method of claim 10 wherein one of said number of bidding agents is a user agent representing said user.
12. The method of claims 10 or 11 wherein said step of allocating further comprises:
- Allocating said ad space to an agent whose bid price is the highest.
13. The method of claim 12 further comprising:
- Debiting an account of said agent whose bid price is the highest.
14. The method of any one of claims 10-13 wherein said step of allocating further comprises:
- Arranging a number of ads in a ranking order in accordance with bid prices received from said agents within said period of time.
15. The method of claim 14 further comprising:
- Debiting an account of each agent for which ad space is allocated.
16. A method of allocating web page advertising (ad) space comprising:
- Identifying a user that is currently accessing said web page;
 - Searching a database for a profile corresponding to said user;
 - Providing, to a number of bidding agents, information about said user;
 - Said information including said profile, upon a condition that said profile is found in said database;
 - Receiving, for a period of time, bid prices from said bidding agents for ad space; and,
 - Allocating, at an end of said period of time, said ad space in accordance with an established relationship to bid prices received from said bidding agents;
 - Said period of time being within an interval after said user is identified and said ad space is allocated.
17. The method of claim 16 further comprising:
- Debiting an account of each bidding agent for which ad space is allocated.
18. The method of claims 16 or 17 wherein said step of allocating further comprises:
- Allocating said ad space to a bidding agent whose bid price is the highest.
19. The method of claim 18 further comprising:

Debiting an account of said agent whose bid price is the highest.

20. The method of any one of claims 16-19 wherein said step of allocating further comprises:

Arranging a number of ads in a ranking order in accordance with bid prices received from said bidding agents within said period of time.

21. The method of claim 20 further comprising:

Debiting an account of each bidding agent for which ad space is allocated.

22. The method of any one of the preceding claims wherein said step of receiving includes receiving a bid price from a user's agent and said step of allocating is circumvented in accordance with an established relationship to bid prices received from said bidding agents.

23. The method of any one of the preceding claims wherein said step of receiving includes returning, during said period of time, bid prices to agents from which bids are received.

24. The method of any one of the preceding claims further comprising:

returning, at an end of said period of time, to agents from which bids are received, final bid prices of agents from which bids are received.

25. The method of any one of the preceding claims wherein said period of time is less than one second.

26. The method of any one of the preceding claims further comprising:

Distributing received bids to each bidding agent within said interval after said user is identified and said space is allocated.

27. The method of any one of the preceding claims further comprising:

Supplying all agents that submitted a bid with a highest bid price after said space is allocated.

28. The method of any one of the preceding claims further comprising:

Supplying a number of bidding templates having provision for entry of a value of each component of a bidding formula, prior to receiving bid prices from said bidding agents for space.

FIGURE 1

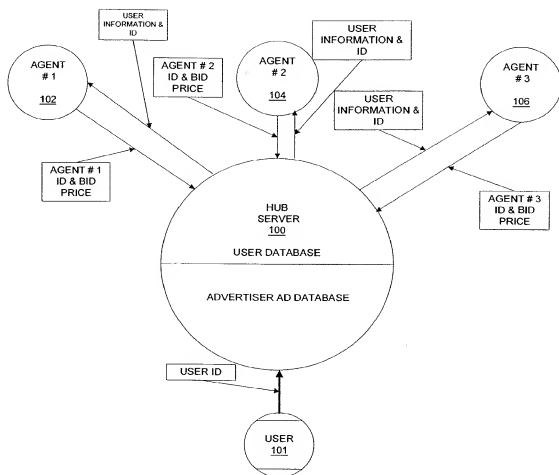


FIGURE 2

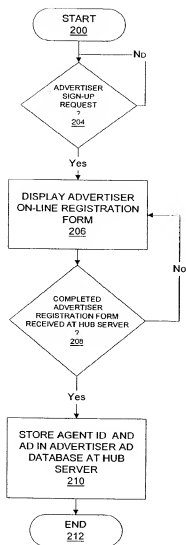


FIGURE 3

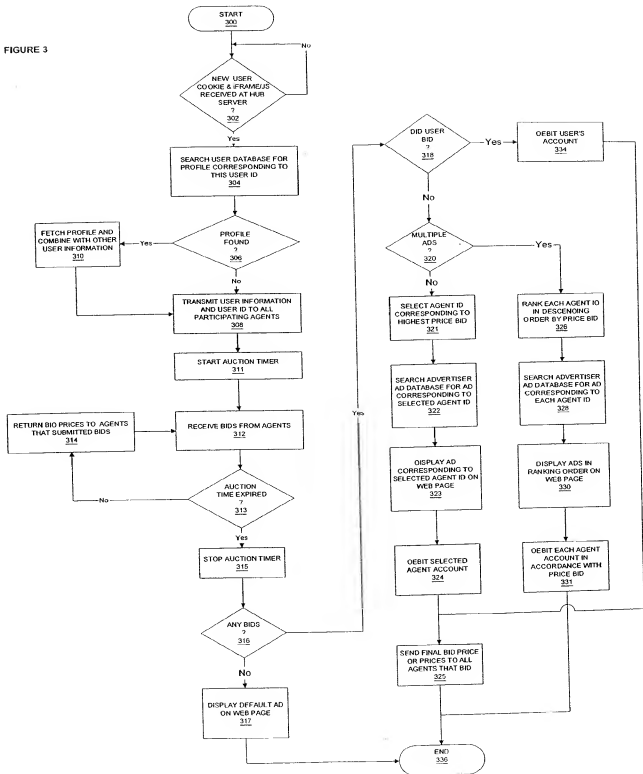


FIGURE 4

